

Amendments to the Drawings

Fig. 10 is amended to schematically illustrate a treating or coating arrangement for a substrate, as recited in claim 19.

Fig. 14 is amended to substitute reference numeral 21 with numeral 22 to indicate the controlling unit.

Fig. 14 also is amended to insert reference numeral 11 to indicate the robot, to conform with the specification.

Fig. 23 is amended to substitute reference numeral 43_a with 43_u, and to substitute reference numeral 43_e with 43_i, to conform to the specification.

ATTACHMENT: Three Replacement Sheets of drawings

REMARKS

Applicants' counsel thanks Examiner Greenhut for his careful and thorough examination of the present application. Herein, the claims have been amended for clarity. Claim 1 has been amended to incorporate the substantive limitations embodied in claim 2 as-filed and claim 2 has been canceled without prejudice. Independent claim 20 has also been amended to describe a method utilizing two separate loadlock and processing towers associated with a single vacuum transport chamber, in order to treat two different horizontal substrates according to processes housed in the different towers as described in the specification. The dependent claims have been amended for clarity and consistency with the independent claims. New claims 22 and 23 have been added, to specifically claim methods wherein the processes carried out in the first and second towers of claim 20 are distinct. No new matter has been entered. Basis for the substantive amendments in claims 1 and 20 can be found in the application as-filed, e.g. claim 2 and Figs. 12-13 and 20-21.

Fig. 14 has been amended to replace numeral 21 with numeral 22 to indicate the controlling unit, in order to avoid conflict with numeral 21 used to indicate another feature. Numeral 11 has also been added to Fig. 14 to indicate the robot in conformity with the specification at page 22, line 22. Fig. 23 has been amended to substitute reference numerals for the upper and lower transport forks in conformity with the specification at page 29, lines 19-20.

The Examiner has objected to the drawings for failing to illustrate the "at least one of a treating and a coating arrangement" recited in claim 19 present in the loadlock arrangement. However, "loadlock arrangement" was recited in error in claim 19 and has been replaced with "processing arrangement." This error should be clear from the application, and basis for the change is found at the paragraph bridging pages 15 and 16 as-filed. Furthermore, Fig. 10 has been amended to schematically illustrate a treating or coating arrangement within a processing arrangement. Basis for this is found at page 29, lines 19-20 as noted above. Accordingly, no new matter is entered and the objection to the drawings is believed overcome.

The Examiner is requested to please review and approve the amended drawings as embodied in the enclosed three Replacement Sheets.

Claim 2 has been objected-to as being in improper dependent form. Claim 2 has now been canceled without prejudice, thus obviating this ground of rejection.

Claims 19 and 20 also have been objected-to. These objections are believed overcome by

the claims as-amended.

Claims 5-6 and 18-19 have been rejected under 35 USC § 112, second paragraph for indefiniteness. These claims have all been amended to overcome the rejections.

Claim 1 has been rejected under 35 USC § 102(b) as being anticipated by Anderle. Claim 1 has been amended to specify the vacuum treating apparatus comprises "a first loadlock and processing tower, a second loadlock and processing tower, and a common vacuum transport chamber," wherein each of the towers includes a processing arrangement and a loadlock arrangement. Anderle does not disclose a device including two towers, *each* comprising both a processing arrangement and a loadlock arrangement. Instead, Anderle discloses an apparatus having two stacks (group A and group B) as illustrated in Fig. 1 and described at col. 2 lines 1-10, but *only the group A stack has an airlock (cf. loadlock) arrangement*, namely airlock chamber 5. See *esp.* col. 2, lines 6 to 18. Accordingly, claim 1 now patentably defines over Anderle.

Claim 1 also has been rejected under 35 USC § 102(b) as being anticipated by Choi. However, that reference also does not disclose two loadlock and processing towers as now recited in claim 1, *each* having its own airlock arrangement and processing arrangement, and all served by a common vacuum transport chamber. Accordingly, claim 1 also now patentably defines over Choi.

The Examiner also rejected claim 2 previously pending over Ogata, on the ground that "Ogata teaches two load-lock-processing towers (Fig. 4)." Office action, page 6. The Examiner's position is that it would have been obvious to modify Anderle according to the two-tower structure the Examiner identified in Ogata "in order to optimize system performance." *Id.* However, it is pointed out that in Ogata, neither of the "towers" identified by the Examiner in Fig. 4 has a loadlock chamber. Each of these towers does include a transfer unit. But this unit is not a loadlock chamber. Instead, it is a pass-through so that the first wafer transferring portion 21 can deliver a wafer W to the second wafer transferring portion 22, which is located on the opposite side of the "tower." See, e.g., col. 7, lns 30-33:

A The first wafer transferring portion 21 removes a wafer W from the carrier C. The first wafer transferring portion 21 transfers the wafer W to the second wafer transferring portion 22 through the transferring unit 51 on the shelf 5A.

To permit this transfer between the oppositely-located transferring portions 21 and 22,

there is no need for the transfer unit 51 to function as a loadlock, so that the atmosphere on one side of it is isolated from the atmosphere on the opposite side. In fact, looking at Fig. 2 of Ogata, this is clearly not the case. Both sides of the transfer unit 51 open to the same chamber or enclosure that also houses the second transfer unit 22 (analogous to a transfer robot). So if the robot in Ogata is said to be located within a common vacuum chamber or housing, then the entire stack/tower that includes each transfer unit also is fully enclosed within the same vacuum chamber. Hence, there is no need to isolate the environment on opposite sides of the transfer units, and in fact such isolation cannot be achieved in Ogata.

Consequently, the combination of Ogata with Anderle still omits a key feature of the claimed invention according to claim 1; that each of the recited towers includes both a processing arrangement and a loadlock arrangement.

Nor does Ogata suggest implementing such a structure as recited in claim 1. Looking at Fig. 2, which is exemplary in Ogata, wafers are loaded into and out from the apparatus described therein via a separate chamber, referred to as a "carrier loading and unloading portion 2" in that patent. Therefore, if an atmosphere barrier is to be established in Ogata between the interior of the apparatus where processes are carried out on wafers, and the outside atmosphere, it is in this "loading and unloading portion 2" where the barrier must be established. As seen clearly in Fig. 2, all the other interior elements are open to the same central space, and cannot be atmospherically isolated from one another to load or unload wafers from the ambient environment. Also clearly seen in Fig. 2, the loading and unloading portion 2 is separate and apart from any "tower" in that apparatus, and clearly is not a loadlock arrangement in one of those "towers" as would be required by present claim 1.

Accordingly, to the extent the features from previous claim 2 have been incorporated into claim 1, it is believed the prior rejection based on Ogata and Anderle also has been overcome.

In the Office action, the Examiner further rejected prior claim 2 (substantively incorporated into claim 1) over the combination of Fig. 11 of Choi with Fig. 12 of Choi, stating it would have been obvious to combine the structures illustrated in these two figures "in order to optimize system performance." This rejection is respectfully traversed, because "to optimize performance" is exactly what the applicant in Choi did in order to arrive at Fig. 12 from Fig. 11. That is, instead of providing two separate towers, one each for the loadlocks and the processing chambers, in Fig. 12 both of these were combined into a single tower. See paragraph [0048],

which describes the embodiment in Fig. 12 and immediately follows the description of Fig. 11: "In...Fig. 12, the working chambers...and load lock chambers...are disposed vertically at one side of the transfer chamber." This was the optimization from Fig. 11. There is no suggestion from Fig. 12 to provide two, independent loadlock and processing towers, served by a common vacuum transport chamber. All that figure suggests in comparison to Fig. 11 is to combine all the chambers that are disposed in two towers in Fig. 11 into a single tower in Fig. 12. There is absolutely no suggestion or reason from the figures or the accompanying disclosure to provide two, completely independent loadlock and processing towers, each having a complete complement of loadlock and processing chambers, so that each can carry out a process on a two-dimension substrate, each independent from the other.

Claim 20 also has been rejected under 35 USC § 102(b) as being anticipated by Anderle. Claim 20 now has been amended to recite carrying out processes, individually, on each of two horizontal substrates within two different loadlock and processing towers, respectively. Anderle nowhere discloses carrying out such a process, nor does it disclose any structure capable to carry out such a process. Accordingly, this rejection of claim 20 is believed overcome.

In view of the foregoing amendments and arguments, it is believed that all claim rejections have been overcome, and that the application is in condition for allowance. Accordingly, notice to that effect is respectfully requested.

REQUEST FOR PERSONAL INTERVIEW

Should the Examiner continue to believe the claims are not allowable after reviewing the enclosed amendments and arguments, then he is requested to please contact the undersigned attorney to determine a mutually agreeable time to conduct a personal interview at the UPSTO.

If there are any fees required by this communication that are not covered by an enclosed check, please charge any such fees to our Deposit Account 16-0820, Order No. 35156US1.

Respectfully submitted,

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